INFLATION AND INFLATION CONTROL IN CHINA, 1937-1947

BY

SIEN-TSIN HU

B.S., National Central University, 1939
M.S., University of Illinois, 1946

AN ABSTRACT OF A THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
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ECONOMICS IN THE GRADUATE COLLEGE
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I

With the belief that sound economic policy must be based upon sound theory, the present study starts with a theoretical approach to found the cornerstone of the whole scheme. The methodology of the present study consists in general analysis and the dynamic approach; as it is believed that inflation is a general economic disequilibrium and dynamic in character. For the dynamic approach, various exogenous factors are taken into consideration when necessary. Space factor had been given special weight inasmuch as the economic structure differs from one country to another.

The present study consists of three parts: (I) Theories of inflation and inflation control; (II) Inflation and inflation control in wartime China; and (III) Inflation and inflation control in postwar China.

The first part is a theoretical approach. The Quantity Theory of Money is reviewed with the aim of finding out the theories of inflation and inflation control in its implications. The modern income analysis is given credit for its merits in the study of inflation. Recent developments in the income approach tend to further analysis of the various factors on both the side of money income and that of the real income (or the national money income versus the national output).

Last but not least, the present study has based its analysis on a unified frontier of general economic theory and money theory. It is, therefore, taken for granted that inflation is a process of general disequilibrium, of over-all economic character rather than only of monetary character.

The second and the third part contain an empirical approach. The second part deals with wartime inflation and inflation control in China, from July, 1937, to August, 1945. The third part deals with inflation and inflation control in postwar China, from August, 1945, to December, 1947. Since the postwar inflation is still under way, later supplements of this part necessarily will remain to be done. In both these two parts, a descriptive approach is made as a framework; dynamic analysis and critical appraisals are made throughout. It is on the basis of the theoretical approach that the empirical approach is handled. And it is through the empirical study that the theoretical synthesis again is to be proved.

Material collection for the empirical study has been found very difficult, since most of the data have not yet been published and some of them are considered as confidential. However, many of the data here used, though as yet unpublished, have been collected by first hand searching from the authoritative sources.

After the review of the theories, analysis of the developments, and appraisals of the control policies, suggestions to the way out of China's inflation are embodied in the conclusion of the present study.

II

Implied in the Quantity Theory of Money held by David Hume, David Ricardo, and J. S. Mill, inflation means that "the amount of goods and of transactions being the same," and "other things being equal," the value of money is lowered due to the increase of "its quantity and its rapidity of circulation." Alfred Marshall accepted the quantity theory but gave more importance to the changes of the "other things" which are assumed to be equal. And he pointed out that the total value of an inconvertible paper currency cannot be increased by increasing its quantity; an increase in its quantity will lower the value of each unit more than in proportion to the increase. F. W. Taussig pointed out that the wartime and postwar (the World War I) inflation due to the overissue of paper money essentially verified the premises of the quantity theory of money.

E. W. Kemmerer defined inflation as that the supply of currency, including money and bank deposits subject to check, increases relatively to the demand for the currency, as expressed in the volume of goods and services to be exchanged, thereby causing a rise in the general price level. Irving Fisher also defined inflation as the price rise due to more money being paid for the same goods. F. D. Graham defended the Quantity Theory by his study on Germany's hyper-inflation, 1920-1923; and C. Bresciani-Turroni confirmed the quantity approach by his *Economics of Inflation.* J. M. Keynes in his *Monetary Reform* was also one of the strong champions of the quantity approach and Gustav Cassel did not go much further beyond this category in spite of his denial of the assumption of "ceteris paribus." Above all, inflation is defined as the rise of prices due to too much money from the viewpoint of the quantity approach. Inflation control, therefore, is centered at the limitation of the quantity of the circulating mediums, both money and credit.

The income approach was started by Von Wieser and later developed by Aftalion. Inflation is defined from the viewpoint of income approach as the rise of prices due to increase of money income without corresponding increase of real income (or national production). The Keynesian approach since his *Treatise* and *General Theory,* so far as the problem of inflation is concerned, is along the Von Wieserian approach. According to Keynes, inflation means rising prices not associated with an increasing aggregate real income. So inflation control is best to withdraw from expenditures those increased earnings to balance the money income with the real income.

Recent contributions such as those of Alvin Hansen, Jacob Viner, William Fellner, S. E. Harris, S. H. Slichter, F. C. Mills, J. S. Davis, R. B. Heflebower, G. Haberler, K. E. Boulding, F. Machlup, M. Kalecki,

and A. P. Lerner are based on the income analysis rather than the quantity approach which characterized the approach of studying inflation after World War I.

Based on a review of the studies of money value in general and inflation in particular, inflation is here defined as the rise of prices due to the increase of money expenditures (the part of national money income to be spent) without a corresponding increase of national output (the part of real income available for consumption). In terms of some notation in the popular equations, by inflation is meant the increase of P as a result of, and later also as a cause of, the increase of $M\,V$ without increase in proportion, or without increase at all, or even with a decrease of Oc which is usually taken for granted as the equivalent of T in the Fisherian equation, O in the Keynesian equation, or Q in the equation of Aftalion or that of Boulding.

Inflation control, therefore, should be resorted to on either side or the both sides of a nation's money income and real income. Difference of emphasis should be made in accordance with different conditions.

III

It would give a better background for studying China's wartime inflation to have a review of her prewar financial conditions. Prewar fiscal reforms in China made the revenues from taxation double the 1928 figure in 1936. The growth of tax revenues indicates the improvement of the Government's technique in revenue raising as well as the development of the nation's taxable capacity. Adjustment of the national debt, both domestic and foreign debts, raised the nation's credit standing so much that leading external bonds were selling above par. The monetary reform of 1935 was carried out with success to give the nation a stabilized currency. China's finances at the outbreak of the War were in good shape though by far inadequate to meet the demands of modern war.

The inflation potentialities were great as an analysis of prewar national income and national output show. Inflation control measures, therefore, started right after the outbreak of hostilities. The Moratorium Order of August 15, 1937, was issued to prevent capital flight and a possible banking crisis. By it both exchange rate and internal value of fapi, the legal tender in paper money, were intended to be maintained. "Wei Wah," the transfer money, was used as a kind of inconvertible credit instrument, to ease the currency shortage and offset the deflationary effects brought forth by the Moratorium Order. The Loan and Discount Committee was also organized by the government banks to help industries and business to meet the war emergency and to facilitate capital movement from the war zones to the inland areas.

However, after the War started, Government expenditures increased enormously while the main sources of the national revenues were taken by the enemy. As taxation and borrowing (those from public savings) could not effectively meet the war expenditures immediately while current money outlay had to be disbursed, borrowing based on credit expansion of the government banks had to be resorted to. The credit expansion was in turn backed by the printing of paper money. From the indices of the government deficit, of the credit expansion of the Central Bank of China, of the note issue and circulation, and of the wholesale prices throughout war years, we find that the data themselves explain the causation of China's wartime inflation.

Table I. The Index Numbers of Government Deficits, Credit Expansion of the Central Bank, the Note Issue, and the Wholesale Prices in Wartime China.

Year	Government Deficits (1937 = 100)	Credit Expansion (1938 = 100)	Note Issue (1937 = 100)	Wholesale Prices (1937 = 100)
1937	100.00		100	100
1938	79.78	100.00	164	104
1939	278.90	405.70	305	177
1940	808.00	930.21	560	1,094
1941	1,817.49	2,079.54	1,076	2,848
1942	3,987.82	11,677.54	2,442	5,471
1943	2,620.10	28,102.47	5,357	20,033
1944	40,327.78	68,623.60	13,464	54,860
1945	241,966.70	429,971.20	73,343	140,448

Note: 1. Credit expansion as shown by the excess of loans over deposits of the Central Bank of China.

2. Note issue base period: June, 1937 = 100 ($1,407 million).

3. Wholesale prices of 23 basic commodities in Shanghai. Base period: January to June, 1937 = 100.

4. Six months figure from July to December, 1938—due to change of fiscal year system.

Source: The index numbers are compiled by the writer in accordance with the data shown in Tables III, IV, V, and VII in the Thesis.

The depreciation of China's paper money on the basis of the wholesale price index of 22 basic commodities at Chungking may be divided into five periods (see Table VII in the Thesis). In the first period, which dates from the outbreak of the War to the Spring of 1939, the wholesale prices did not change very much. Taking the index of January to June, 1937, as 100, the general index fluctuated around 100 and never rose more than 10 points until March, 1939. The steadiness of price level in spite of heavy government war financing during the first two years can be ex-

plained by the increase of money income accompanied by an increase of employment and also an increase of production. And the increase of paper money issue was absorbed by its increased demand in wider areas of circulation aside from those absorbed by hoardings and capital flight.

The second period of the paper money depreciation started from the Japanese heavy bombing of Chungking on May 3 and May 4 of 1939 until the outbreak of war in the Pacific in December of 1941. In this period, the depreciation of the paper money was in full swing. The general index increased 70 points in 1939, while the increase in 1938 only amounted to about 6 points. In 1940, the increase amounted to 915 points. It amounted to 157 points in the first half of 1940 while that of the second half amounted to 758. Special mention should be given to the rise of food prices. They increased only about 58 per cent in 1939, but rose about 1,000 per cent by the end of 1940. Reasons for the skyrocketing of food prices can be found partly in the comparatively poor harvests of the year. But speculation and manipulation of the market further intensified the shortage and raised the prices.

The third period, from May, 1941, to May, 1942, marked by acceleration of the depreciation of the paper money. In a single year from May, 1941, to May, 1942, the price index increased 2,643 points; while in the two-year period from May, 1939, to May, 1941, it only increased 1,596 points. The outbreak of war in the Pacific brought a little drop in the price index. It declined from 2,914 in November to 2,848 in December. But it soon regained its inflationary momentum.

In the fourth period, from May, 1942, to October, 1944, inflation was feeding itself up. In spite of strict price control, the general price index again started to rise in August, 1942. Runaway inflation appeared to gain momentum as the July-August monthly difference of 1942 amounted to 611 points in comparison with only 10 points of 1941, 74 points of 1940, and only 4 points of 1939.

The fifth period, from November, 1944, to the end of the War, was the worst in China's wartime price record as well as her strategical history. The monthly price increase rated from 10,000 points to 20,000 points. At the end of the War, i.e., in August, 1945, the government note issue had increased to about 396 times that of the prewar days while the circulation was limited to only about one-tenth of her territory. The general price index increased to 179,500. — That is, the paper money had depreciated to only about one-eighteen hundredth of its original purchasing power. The nation faced the most perilous situation financially as well as militarily on the eve of final victory.

Price dispersion is a common phenomenon in wartime inflation, particularly in China's case. Regional price differentiation in China's war-

time inflation was great because there was a shortage of roads and modern transportation facilities. Especially in the late war years, increasing transportation difficulties were made far worse with the completion of the Japanese blockade (see Table VIII in the Thesis).

Monetary control of China's wartime inflation started with the strengthening of the central banking group. Money supply was controlled through the limit of cash withdrawal and the promotion of savings. Among the measures to encourage savings, the gold savings deposit system needs special mention. The system was successful in contracting money supply. It was reported that by the end of June, 1945, the system had succeeded in withdrawing $62,509,102,500 of paper money from circulation, when the total money in circulation was estimated as about $220,000,000,000 at the same time.

Credit control was characterized by the deposit reserve requirement, interest rate control, and open market operation. The reserve control required any bank to deposit a "reserve fund" equivalent to 20 per cent of its total deposits except the saving deposits, with any of the four government banks. The control failed as a result of the easy money policy. Interest rate control not only failed but brought forth inflationary effects which were supposed to be checked, because the interest rate was stipulated too low and the discrepancy between the official and the market rate of interest was too great. Thus, the low rate of interest charged by the government banks rather encouraged hoardings and speculation and indirectly stimulated the rise of prices. The open market operations failed to check inflation too. Without effective control of the money market, the open market operation of gold sale became a one-way operation. The government banks could only sell out gold but could by no means buy it back. Gold speculation again stimulated price rise rather than arrested the price inflation.

The exchange rate of the Chinese paper money at the outbreak of the War, was quoted at 1s/2 5/8d (buying rate) and 1s/2 3/8d (selling rate) and US$30 and US$29.5 respectively. After the outbreak of War, the Government announced its determination to maintain the rate but there was no exchange control at all.

China's wartime exchange control was rather a result of the currency warfare. The Sino-Japanese currency warfare may be divided into four stages. The first stage started from the Japanese maneuver to wreck China's economy before the War broke out. After the outbreak of hostilities in the fall of 1937, the Bank of Chosen in Tientsin forced the Japanese Yen notes into circulation. It was Japan's aim to drive out the Chinese paper money by the Japanese Yen and so to force North China into the Yen bloc. They withdrew the Chinese paper money in North

China and with it traded for foreign exchange in Shanghai. By wrecking Shanghai's exchange market they gained foreign exchange resources. But they failed in this stage as China succeeded through the monetary reform of 1935, in building up a strong confidence in the paper money.

The second stage of the currency war began from the opening of the puppet "Federal Reserve Bank of North China" on March 10, 1938. The Bank issued the FRB notes to withdraw fapi from circulation and trade it for foreign exchange in Shanghai. In Shanghai, the exchange rate, though maintained expensively by the Government, already had fallen from 1s/ 2 ½d to 8d. Under such pressure of the Japanese and the puppet monetary offensive, the Government started the exchange control. Under the control system, all exchange transactions were centralized through the Central Bank of China. The introduction of exchange control and prohibition of the circulation of the FRB notes made the puppet paper money worth nothing more than a piece of paper. The exchange value of fapi fell in this stage yet it was again stabilized at a lower level.

The opening of the Japanese sponsored Hwa Hsin Commercial Bank in Shanghai and its issue of paper money started the third stage of Sino-Japanese currency war. This time, Japanese tried to tie up the notes issued by Hwa Hsin with fapi, as they claimed that the reserve of the note issue of Hwa Hsin was 100 per cent in fapi. By so doing, they tried to win confidence from the Chinese public and, on the other hand, to keep off the anticipated effects of depreciation of the Hwa Hsin notes from the Japanese Yen. After Hwa Hsin notes were more or less acceptable, it was planned to manufacture an inflation by flooding the note issue and shift the inflationary effects to fapi. As a counter measure, the Government ordered, on June 21, 1939, another limit on the withdrawal of cash in Shanghai to prevent Hwa Hsin from obtaining sufficient fapi for its note reserve.

The currency war started a new stage from the Order of "Freezing Japanese and Chinese Assets" by the United States and Great Britain. By the Order, the Chinese Government not only gained control over her foreign exchange resources abroad; but started a kind of indirect import control through the export license system adopted by the United States and Great Britain. As a result of the Order, the "free market" ended while a "black market" thenceforth arose due to the shortage of exchange in the market.

Another phase of the currency war started from May 31, 1942. On that date, the puppet Nanking Government promulgated a regulation to withdraw fapi from circulation and replace it with the puppet "Central Reserve Bank" notes. Failed to trade for foreign exchange with the withdrawn fapi, the puppet Government tried to use it to purchase war ma-

terials from Free China. Therefore, the Ministry of Finance adopted in November, 1942, a measure providing that no person should carry into Free China from the occupied areas more than $10,000 in fapi. On the contrary, the Government repealed the regulations to ban the flow of fapi into the occupied areas so that the money income in Free China could be reduced while necessary materials could be traded in. To increase real income on the one hand by reducing money income on the other was a wise way to check inflation.

Though successful in crushing Japan's plan of complete monetary conquest in the currency war, China suffered far greater depreciation of the exchange value of her currency. The Japanese Yen depreciated in the New York market not more than 20 per cent up to the Anglo-American freezing of the assets; while the Chinese paper money, the fapi, depreciated more than 80 per cent during the same period.

However, the exchange value of fapi depreciated much less than its domestic value. During the same period, the domestic value of fapi, according to the wholesale price indices, depreciated to 1/22 in Chungking and 1/9 in Shanghai while the exchange value in terms of the U. S. dollar only depreciated to 1/5.6. The fair success of the Government's efforts to stabilize the exchange value of fapi proves the mistake made in delaying the exercise of exchange control. The discrepancy between the depreciation rate of the domestic value and that of the exchange value explains the failure to prevent inflation on the home front through exchange stabilization.

The exchange stabilization efforts were characterized by open market operations, and unlimited buying and selling of foreign exchange, at the beginning of the War. In order to stop and to replenish the drain on foreign exchange, attempts were made to increase exchange resources, such as to increase the international inpayments through exports and overseas remittances in addition to trading the nation's silver stock and gaining foreign financial assistance. To encourage exports and to attract overseas remittances various devices of subsidies were adopted. To stop the exchange drain, exchange control was started with leniency and gradually became severe.

After January 1, 1942, the official rate of exchange was readjusted to US$0.05 and 3 d. respectively, and was pegged until the War was over. The rate pegging, without being very effective in stabilizing the exchange rate, brought forth detrimental effects as the pegged rate was too much overvalued. It hurt the export trade and thus reduced the exchange resources therefrom. Windfall profits resulted from the rate pegging for importing business naturally increased the drain on foreign exchange and

cultivated black market in exchange. — These became the obstacles for wartime exchange stabilization.

Now let us turn to the fiscal control of wartime inflation. As the government revenues were greatly reduced after the outbreak of the War, emergency measures in taxation had to be taken to meet the war need. Among the measures, interport duties were charged, the stamp tax was doubled, native wine and tobacco taxes were increased. Various wartime tax reforms were adopted in an attempt to raise revenue on the one hand and to curb inflation on the other. Among these, income tax was improved, wartime excess profits tax and inheritance tax were innovated, and the business tax and stamp tax were adjusted. Commodity and salt taxes were improved and made much more productive. The customs system was reorganized and customs policy was reshaped in order to increase revenues therefrom notwithstanding that most of the nation's ports were occupied by the enemy. The land tax in kind not only raised ample foodstuffs to feed the nation's army but cut the government cash expenditures to a considerable amount and indirectly stabilized general prices to some degree.

Success or failure of the efforts to tax can be appraised through the comparison of tax receipts and their percentage of the total national expenditures throughout the war years. In 1937, when the War started, tax receipts including customs revenues constituted more than 65 per cent of the total expenditures. In the 1944 budget only 45 per cent of the total expenditures were planned to be met by tax receipts, of which the land tax was the mainstay. Since the real expenditures exceeded the budget figure over $200,000,000,000, the percentage of tax receipts to the total expenditures became far less than the budget percentage. Instead of increasing revenues through taxation to fight the War, the Government rather relied on borrowing and creating money in its war financing. Though realistic difficulties of wartime taxation should be understood, lack of courage and efforts to tax were evident. Besides, a grave mistake in the tax pattern should not be overlooked. In the late war years, as increases in direct taxes encountered certain difficulties, more revenues were raised through indirect taxes with expediency. The increases of the indirect taxes, through shifting of the tax burden, further increased prices. The retreat in direct taxation left room for surplus capital maneuvering in speculation. The change of the tax pattern in the late war years had, therefore, been inflationary rather than deflationary.

The total wartime domestic debt outstanding was estimated about $21,862,100,000. Among these securities, only a minor part was subscribed from the savings of the public, while the major part was held by the gov-

ernment banks and commercial banks. The bank holding of government bonds constituted the basis for credit expansion. (For wartime domestic debt see Table XX in the Thesis). The borrowings, resorting to money creation, instead of absorbing savings from the public are likely to be inflationary.

So far as the wartime foreign debt is concerned, a total of 12 foreign loans, except those for currency stabilization, amounting to US$870,000,000 and £58,047,000 which were equivalent to $22,043,760,000. were raised in the course of the War (see Table XXI in the Thesis). Most of the wartime foreign loans were barter agreements. These were necessary to increase production of the assigned products, so some of the productive agents for civilian consumption goods had to be transferred to the assigned lines. This was derived from the wartime diversion of both human and material resources from civilian to war production. It, hence. caused inflation in an indirect and rather obscure way.

The development of wartime commodity and price control is also divided into five periods in accordance with the wartime development of the rising prices. The first period was characterized only by economic control in general but not price control in particular. In the second period the commodity and price controls centered on the suppression of profiteering through hoarding and manipulation. Regulations Governing the Valuation of Commodities and the Suppression of Speculation and Manipulation in Time of Emergency were adopted on February 7, 1939. Valuation of commodities was planned to hold the line against rising prices. The Government intended to control prices without direct interference with the behavior of the price mechanism. After the heavy bombing of Chungking in May, 1939, prices went up with greater strides and with further price dispersion. The Government started, thenceforth, more direct intervention for commodity and price control, yet with the intention of not disrupting the price mechanism. With the purpose of increasing the supply of daily necessities and so to check the rising prices, the Bureau for the Purchase and Sale of Daily Necessities at Equitable Prices was established with a capital of $20,000,000, and handled the retailing as well as wholesale business in the daily necessities. The policy was not successful in arresting rising prices; and on the contrary, prices went up as the demand was further stimulated by the increase of money expenditures put into the market by the Bureau and prices were bid up in the course of competitive buying of the Bureau with consumers and speculators when the output was not increased.

The third period was characterized by the introduction of food control in particular and improvements in commodity and price control in general. Food control was started after the establishment of the National

Food Administration on August 1, 1940. However, the failure of food control by the National Food Administration necessitated the establishment of the Ministry of Food on July 1, 1941. With full authority and equipped with ample financial and personnel facilities, the Ministry of Food controlled food prices and food supply from the point of production through the point of consumption. Supply of food which was needed to feed the nation's army was assumed through collection of land tax in kind and supplemented by compulsory purchase and later, compulsory borrowing. Storage and transportation were facilitated to adjust the supply and demand; so the total utility could be increased through better transfer of utility. Improvements in commodity control in general were characterized by better co-ordination and correct principles. For planning and co-ordination of commodity and price control for the entire nation, the Economic Council was established in February, 1941. The council adopted in November, 1941, the Fundamentals Governing Enforcement of Price Stabilization. To improve administrative efficiency, the Commodity Administration was established under the Ministry of Economic Affairs with the merger of the Agricultural Credit Administration, the Bureau for the Purchase and Sale of Daily Necessities at Equitable Price and Fuel Control Administration. New bureaus for control of edible oils and for control of paper were later created under its supervision. Programs for commodity registration, allocation, and rationing were planned to be brought forth but unfortunately were not thoroughly carried out. The Commodity Administration again failed to stabilize prices, since it operated without co-ordination of monetary and fiscal control.

Starting from the fourth period, price control entered into an advanced stage. Controls were based on the principles laid down in the National General Mobilization Act of May 5, 1942, and its related regulations. Policy making and co-ordination work were, thenceforth, concentrated in the charge of the Standing Committee of the National General Mobilization Council; while control of different commodities was decentralized in the hands of the different administration (see Chart II in the Thesis). In this period, a price-ceiling program was carried out. Transportation charges and wage rates were also restricted in order to ensure the effectiveness of the price ceilings. The increase of production and purchase of commodities from occupied areas were encouraged to raise the market supply. Above all, fiscal and monetary control were strengthened to co-ordinate with measures for price control. The strict control of commodities and price in this period had a fair success in checking the runaway inflation.

In the fifth period, China could not help but fail to curb the runaway

inflation as the existing commodity stocks became depleted while the national money income increased in far greater proportion.

In short, the wartime commodity and price control failed as a result of trial and error in the early stages. Planning and preparations, which are determining factors for the success of control, were lacking. After commodity and price controls were started, they failed without control over both demand and supply. As demand was uncontrolled, speculation could not be eliminated wherever windfall profits exist. The lack of nationwide co-ordination, moreover, made grave loopholes for the controls.

Though in the later stages, both demand and supply were controlled and better co-ordinations were attained, yet all improved measures were too late to be effective in arresting the runaway inflation. On the other hand, the strict control, mostly with resort to police forces, only slowed down, time and again, the speed of price inflation, but deepened the seriousness of latent as well as repressed inflation.

IV

By the end of the War, the wholesale prices of the 22 basic commodities in Chungking had increased 1,795 times as compared with those at the beginning of hostilities. In Shanghai, in terms of the puppet "CRB" notes, the wholesale prices of 23 basic commodities increased 86,400 times. This points out that the puppet regime suffered much worse inflation before the end of the War.

In terms of American currency, the Chinese paper money depreciated by the end of the War to about 1/530 in Chungking where the black market rate between the two currencies was 1,764 to 1 in comparison with the rate of 3.33 to 1 in the first half of 1937. In Shanghai, as of August, 1945, the Chinese paper money depreciated only to 1/132 when the black market rate was $439 to US$1.

The nation's total money supply in terms of note issue at the end of the War reached a high of $556,907,000,000. By the end of 1947, it reached about $28,000,000,000,000 to $40,000,000,000,000. Even according to a conservative source, the note issue increased 50 times that in August, 1945, in which month the War ended, and reached about 20,000 times that of June, 1937, in which the War started. Credit expansion, as measured by the excess of loans over deposits of the Central Bank of China, and taking that of 1938 as a base period, increased about 4,300 times in 1945. It reached to about 12,589 times in 1946 and to about 121,495 times in 1947. Though money supply is not the only factor in inflation, yet, under the disrupted production mechanism, the increase of money, representing a demand for more commodities than were available, necessarily has the effect of producing inflation.

The trend and causation of the growth of government deficits, of the Central Bank credit expansion, of note issue, and of the wholesale prices are shown in Table II.

Table II. The Index Numbers of the Government Deficits, of the Central Bank Credit Expansion, of Note Issue, and of the Wholesale Prices in China's Postwar Inflation.

Year	Government Deficits (1937 = 100)	Credit Expansion (1938 = 100)	Note Issue (1937 = 100)	Wholesale Prices (1937 = 100)
1945	241,966.70	429,971.20	73,343	88,544.2
1946	725,900.10	1,258,926.80	264,827	571,313.0
1947	5,444,250.00	12,149,484.00	2,000,000	8,379,600.0

Note: 1. Credit expansion as shown by the excess of loans over deposits of the Central Bank of China.

2. Note issue base period: June, 1937 = 100 ($1,407 million).

3. Wholesale prices of 23 basic commodities in Shanghai. Base period: January to June, 1937 = 100.

Source: The index numbers were compiled by the writer in accordance with the data shown in Tables XXIII, XXIV, XXV, and XXVI in the Thesis.

In explaining postwar hyper-inflation, due consideration should be given to the money psychology. Everybody envisaged that government paper money would have to be depreciated due to the increase of note issue as a result of civil war financing. Then everybody wanted to get rid of the paper money as soon as possible just as they did with the puppet regime paper money at the end of the War. And, amateur as well as professional speculation was speeded up and the shortage of commodities due to War was made all the more acute. All these accelerated the collapse of the paper money. This is exactly what Schacht called "refuge in material values" in the hyper-inflation of Germany.

Right after the War ended, it had been considered by the Government to check inflation by importing commodities to meet the shortage. Unfortunately, this caused unbalanced trade and the drain on foreign exchange. The Provisional Regulations for the Imports and Exports Trade were revised on November 17, 1946, with the purpose of checking the excessive imports of unnecessary consumers goods and to arrest the drain on exchange resources.

On February 5, 1947, a new plan of export subsidy and new surcharge on imports were announced. The new plan provided that the Government should allow 100 per cent subsidy on the price of exported goods when the exporters are required to sell their realized foreign exchange to the

Government. To meet the appropriation for the subsidy, the imported goods were subject to a 50 per cent surcharge ad valorem above the original tariff, with the exception of machinery, foodstuffs, cotton, coal, cokes, fertilizers, etc. When the United States, which takes more than 70 per cent of China's postwar exports, raised tariff charges on her goods against the subsidy plan, it was not good for the exporters but induced another official devaluation of the nation's paper money. Moreover, the new surcharge on imports was shifted to prices of the imported commodities. This again directly and indirectly raised the price level and stimulated the depreciation of the paper money. Failure of the open market operation of the Central Bank and rising speculative activities further depreciated the paper money in terms of gold quotations and stimulated the skyrocketing of wholesale prices. — The general price index of February, 1947, hit 10,000 times the level at the beginning of the War.

The collapse of the paper money became so serious that the economy of the nation was at stake as President Chiang openly announced on February 16, 1947. To meet the economic catastrophe, the Government adopted the Emergency Economic Measures which are characterized by balancing the budget, prohibiting speculation and stabilizing the money market, developing international trade, controlling prices and wages, and assuring the supply of daily necessities at the fixed prices to meet the community need. All these measures put the nation's economy again under rigid control. The measures succeeded only for a time. Prices kept skyrocketing. In late 1947, the paper money depreciated so much that the peasants in Central China refused to accept the government paper money in payment for their agricultural goods. The legal tender system, which was effective in financing the War, had evidently broken down.

The collapse of the paper money in domestic value as expressed in the wholesale price index in Shanghai was horrible up to the end of 1947. The general index reached 8,379,600 points; that is, increased more than 80,000 times above prewar prices. As far as exchange value is concerned, though the official rate was fixed at $12,000 per US$1 at the end of 1947, the black market rate had already hit no less than $150,000 per US$1. In terms of U.S. currency, the total note issue was worth only about US$266,666,667, as the total note issue was believed to be close to $40 trillion.

The collapse of the paper money should be ascribed to the inadequacy of the postwar monetary policies. First of all, the Central Bank of China has been operated too much as a subsidiary of the Ministry of Finance in the postwar period as in wartime. Required to meet the extraordinary government financing, the over-expansion of credit and over-issue of notes

have lost the Central Bank its control over the money market. Being only a scapegoat of the abusive spending policy but being unable to exercise control of the nation's financial market, the central banking function is at stake. To meet the government need for war financing, credit expansion and note issue were of necessity as well as of expediency. The note issue up to the end of 1947 increased over 20,000 times of the prewar figure. Credit expansion as expressed in the excess of the loans over the deposits of the Central Bank of China shows a far greater increase. Up to the end of 1947, deposits had increased 16,000 times of 1937 figure, while loans increased more than 64,000 times and the latter reached about 4 times the former. Interest rate control failed as the government bank rate had been stipulated too low. The Central Bank rate on September 30, 1947, for instance, was $0.6 per mille per diem for rediscount and $0.5 per mille per diem for call loans, while the call loan rate for the Native Bankers' Association is five times higher; the commercial bank call loan rate maximum is eight times higher; and the black market rate is more than thirteen times higher, about $8.00 per mille per diem. With discrepancies as there are, there is no doubt that the banking control through the interest rate control is ineffective. Together with the easy money policy, the interest rate control not only failed but stimulated inflation. The gold policy failed too, due to inadequate operations; it resulted in the rise of prices of gold followed by further increase of prices. In addition to the revised percentages for the reserve requirements — 15 to 20 per cent of the currency deposits and 7 to 15 per cent of the fixed deposits — all possible controls of commercial banking have been resorted to in order to check inflation, such as prohibiting the commercial banks from dealing in foreign exchange, gold and silver bullions and from engaging in commercial and industrial enterprises. The New Bank Regulations of April 17, 1946, were aimed to eliminate the inflation-generating effects of speculation. However, the measures are so strict that the hands of the commercial bankers were tied and all money trade was driven underground. The so-called "underground" banks, evading all banking regulations, produce more harm to the economy and speed up inflation all the more.

Concerning exchange control, the policies were not well-considered and not well-managed as shown in the changes in its course. The pegged rate policy since wartime could no longer be maintained when the market rate became about 100 times greater than the pegged rate. After February 25, 1946, a free exchange policy was adopted. The official rate was changed to $2,020 to US$1. The free exchange policy facilitated mounting imports and extravagant spending of government institutions and so led to the unbalanced trade and drain on foreign exchange resources. Then, the

paper money became more and more overvalued since the exchange reserve was being depleted and the domestic prices were soaring. With the purpose of aiding exports, checking excessive imports, and attracting the overseas remittances, another devaluation of the paper money was taken on August 19, 1946. The rate was, thenceforth, changed to $3,350 to US$1. However, not long after the rate adjustment, prices of some imports jumped 100 per cent. The prices increased much more than the money had been devalued. The expected benefits of the devaluation therefore were immediately offset. The official rate could hardly be maintained again since the black market rate hit $17,500 during the gold scandal around the middle of February, 1947. The skyrocketing prices and exchange rates brought about more than ever detrimental effects to domestic production and the exporting trade. And, the confidence in the paper money was almost entirely lost and people were crazy for speculation. The collapse of the exchange value of the paper money especially gave the sign of an economic catastrophe. Strict exchange control, therefore, was found again necessary to stabilize the nation's economy. After the announcement of the Emergency Economic Measures on February 17, 1947, transactions in foreign currencies and gold bars were provided by law to be strictly prohibited. The official exchange rate was changed again to $12,000 to US$1. The Emergency Economic Measures succeeded only for the time being. The discrepancy between the official and the market rate later grew greater and greater; the overseas remittances were again turned into the black market from the official channels. The February regulations for exchange and trade control were revised on August 16, 1947. Accordingly, a cover rate for the open market was provided and was to be adjusted by the Exchange Equalization Board in accordance with the demand and supply situation of the exchange market. The cover rate was devised to be kept in exchange parity in order that the black market could be eliminated and overseas remittances could be attracted back into the official channels. Exchange at the cover rate is only supplied to those importers whose order conforms to the restrictions of the new trade regulations. The cover rate was, on the first day, fixed as $38,636 to US$1. The official rate of $12,000 to US$1 was still maintained for the financing of imports of the daily necessaries such as rice, wheat and flour, cotton, coal and coke. Government expenditures in foreign exchange may also be supplied at the official rate.

Yet, civil war was still going on. Government expenditures kept increasing and were financed through note issue and credit expansion. Transportation was disrupted. Production was reduced or even entirely stopped. So the depreciation of the paper money in its exchange value as well as its domestic value remained uncontrolled.

The postwar fiscal policies were far from being adequate. The unlimited expansion of government spending was inevitably one of the most important causes of the postwar hyper-inflation. The postwar fiscal gap of 1945 was estimated at around $1,200,000,000,000. In 1946, it was estimated at about $3,600,000,000,000 and in 1947, about $27,000,000,000,000.

The Government had to find some way out to raise more revenue and to control inflation. Therefore, on March 26, 1947, the issue of US$400,000,000 worth of new bonds was announced. Tax rate adjustment and immediate collection were provided in the New Income Tax Law of April 16, 1946. A General Personal Income Tax was also instituted in the same law. Property tax and a kind of capital levy were proposed but still remain in argument. Sale of the properties of public enterprises was estimated to produce about US$400,000,000 to strengthen the nation's currency reserve and balance the nation's budget.

However, China's postwar fiscal policies are inflationary rather than deflationary. Extravagant rehabilitation spending and unlimited civil war financing brought government expenditures far beyond the cover of budget revenues. Without adequate means for revenue raising, the Government only resorted to deficit financing. Increasing spending caused increasing bank credit creation and paper money issue; these induced price increase and led to rising expenditures and further deficit and so constituted the vicious spiral of inflation.

Nevertheless, this inflationary fiscal policy is an unnecessary evil in China. The tax capacity of the nation is far from being fully reached. Instead of having increased revenues from taxation, the Government really cut down its revenues in real value through the inflationary financing. Tax exemptions and tax avoidances through political or social influences not only work against tax justice but constitute loopholes for the flight of an important portion of the nation's taxable income. Hyper-inflation necessitated various changes of tax regulations and tax rates; the principle of certainty of taxation was violated. Graft in tax collection is inevitable during the hyper-inflation when the government employees are very much under-paid; so unfortunately a great portion of the tax money goes to graft rather than into the nation's treasury. The postwar borrowing was not well handled too. It failed to absorb the idle capital maneuvered in speculation.

In conclusion, to stop China's inflation, it is of first importance to fill up the fiscal gap. Instead of filling up the fiscal gap by paper money and bank credit creation, taxation and borrowing from savings must be resorted to. Borrowings out of savings proved difficult in China as savings constituted a very small portion of China's national income even in peace time and must have declined in inflation and hyper-inflation. Taxation,

which is always considered as the best way to raise revenue, is possible and yet much remains to be done. In China, the high rather than the low income groups should be more heavily taxed. Speculation, more than consumption, should be curbed to check the inflation. Therefore, it is suggested that income tax rate should be greatly raised and be made more progressive. The turnover tax should be initiated, especially on the use of the bank deposit currency, in order to arrest the acceleration of the velocity of money in circulation. Special excess profits tax should be heavy so as to discourage speculation. A general sales tax is recommended to curb consumption, especially that of the non-necessities. In addition to monetary measures, savings should be encouraged through fiscal measures, such as various allowances in tax payments for the money income invested in government saving bonds. Means must be found to curb spending and to make saving seem desirable. Above all, excessive purchasing power must be absorbed. Government expenditures must be met by taxation. Taxation is better than inflation. And the people should be able to stand taxation inasmuch as they must otherwise stand inflation at any rate. However, without a stable monetary unit, taxation would mean nothing in hyper-inflation. Money reform is not necessarily to be undertaken after the nation's budget is balanced, though a balanced budget is a condition for the success of a money reform. Yet, a balanced budget is likely to be achieved only when a stable monetary unit is established.

A stable unit of money through a money reform can only be achieved by limiting the new issue and strictly restricting bank credit. A new kind of managed money is as good as a gold standard if it will be well managed. A 100 per cent or a high percentage of gold and exchange reserve will give more confidence in the money on account of its redeemable value. However, such a reserve is not absolutely necessary for stabilization. The German Rentenmark was stabilized without any gold cover. The gold standard is too expensive and unworkable for China. A gold exchange standard with strict exchange and trade control is recommended for stabilization at least before international monetary co-operation can be assured. The new money, whatever it may be, should be undervalued instead of being overvalued. Only through undervaluation of the new money could exports be increased and international payments be bettered. And, the exchange black market could naturally be eliminated. For money stabilization, psychological considerations are as important as economic considerations. Public support must be achieved and public confidence in the new money must be maintained. Inflation control will be more effective if the purse of the people is controlled by the people for the people.

Above all, increase of the national output to fill up the inflationary gap is no less important than various controls over the money income. In China, as there are vast frontiers of undeveloped resources, material resources as well as human resources, increase of the national output, however difficult it might be, is not impossible. Moreover, the nation's productivity will be highly enhanced by improving technology and promoting efficiency.

But under the existing conditions, assuming an increase of the national output be impossible at least for the time being, then direct controls such as price control, rationing, and allocations must be adopted and strengthened. Price and commodity controls could hardly be satisfactory unless they were well co-ordinated with trade and exchange controls. Fiscal and monetary controls, moreover, are also determining factors for the success of direct control. In summary, not only will inflation be controlled, but economic stabilization will be attained if the national money expenditures will be so restricted and the national output will be so expanded that the nation's demand and supply will be put again in equilibrium.

Inflation control would be made much easier and assurable if the nation's civil strife could be ended and political stability could be restored. Nevertheless, even without the termination of the civil war, inflation should still be put under control no matter how hard it may be. China's inflation is so far no more serious than the German hyper-inflation of 1923 or the Russian hyper-inflation of 1924. While the peak of price index in German hyper-inflation reached about 1,422 milliards (1913 = 1) and that of the Russian hyper-inflation reached 16 trillion (1913 = 100), the wholesale price index in Shanghai only reached 83,-796 (1937 = 1) up to the end of 1947. The German as well as the Russian hyper-inflation was finally controlled under no lesser difficulties than those today in China.

In spite of whatever trouble there may be, I conclude my study with confidence in the success of the control of China's inflation if we take the right way.

VITA

Sien-Tsin Hu, also Frank Hu, was born on February 26, 1915, in Liangtu, Tungtai, Kiangsu, China. He attended the Liangtu Primary School from 1925 to 1928. Thenceforth, he studied in Nantung High School, Kiangsu, and graduated in 1934. He entered the National Central University, Nanking, China in 1935. After the War broke out, he went to Chungking, China's wartime capital, together with the University. He graduated with a B.S. degree in Psychology in 1939. From 1939 to 1941, he carried on his own research project in economics. He also studied philosophy, logics, history, and other social sciences on his own interest. From 1941 to 1943 he served as the acting principal of Chungking Municipal High School. Starting in 1944 he prepared to go to the United States to further his study. He arrived in Los Angeles, California, on February 2, 1945. Then, he attended Stanford University from February to September, 1945. Since October, 1945, he has studied at the University of Illinois. He received the M.S. degree in Industrial Management from the University of Illinois in June, 1946. Thenceforth, he has worked for his Ph.D. degree in Economics. He was awarded a Fellowship in the Economics Department from 1947 to 1948. He has been elected to these honor societies: Phi Beta Kappa, Beta Gamma Sigma, and Sigma Iota Epsilon. He is a member of the American Economic Association.